

SOV/70-3-4-2/26

AUTHORS: Gendelev, S.Sh. and Shafranovskiy, I.I.

TITLE: Edge Forms in the Cubic System (Rebernyye formy kubicheskoy singonii)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 4, pp 405-415 (USSR)

ABSTRACT: The results of the deduction of the edge forms occurring in the cubic system are given. Tables and drawings of all the edge forms appropriate to the group O_h indicating the faces on which they appear are quoted. The numbers of edge forms for all five of the cubic groups are indicated. The various possible combinations of pairs of forms are first listed - essentially combinations of two of the forms: 100, 110, 111, $hk0$, $hh\bar{l}$, hkk , $hk\bar{l}$; but including some pairs such as $hk\bar{l}$; $hk\bar{l}$ and $100:00\bar{l}$. In all, there are 32. The possibilities for the holohedric class O_h are drawn out, a clinographic drawing and a projection being given for each of the 38 combinations. A table indexes these. A specimen of one combination ($100:hk\bar{l}$) is shown in the different symmetries appropriate to the 5 cubic

Card 1/2

Edge Forms in the Cubic System

SOV/70-3-4-2/26

classes. For the class O_h there are 38 forms, for O 29, for T_d 35, for T_h 30 and for T 29, making a total of 161.

There are 3 figures, 4 tables and 10 references, 9 of which are Soviet and 1 German.

ASSOCIATION: Leningradskiy gornyy institut (Leningrad Mining Institute)

SUBMITTED: May 12, 1958

Card 2/2

SOV/70-3-5-23/24

AUTHORS: Shafranovskiy, I.I., Stulov, N.N., Tatarskiy, V.B.
and Frank-Kamenetskiy, V.A.

TITLE: Certain Observations in Connection with the Article of
Academician N.V. Belov "On a Course of Geometrical
Crystallography for Physicists" (Neskol'ko zamechaniy
po povodu stat'i Akad. N.V. Belova "O kurse geometricheskoy
kristallografii dlya fizikov")

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 5, pp 637-638 (USSR)

ABSTRACT: Complaints by Leningrad mineralogists against the
excessive physical bias by Belov in his article.
There are 4 references, 2 of which are Soviet and
2 German.

ASSOCIATION: Leningradskiy gornyy institut. Leningradskiy
gosudarstvennyy universitet.
(Leningrad Mining Institute and Leningrad State
University)

SUBMITTED: May 23, 1958

Card 1/1

SHAFRANOVSKIY, I.N.; GENDELEV, S.Sh.

Peak, edge, and face forms of crystals. Min.sbor. no.12:
43-56 '58. (MIRA 13:2)

1. ^{Горный} institut imeni G.V.Plekhanova, Leningrad.
(Crystallography)

POPUGAYEVA, L.A.; SHAFRANOVSKIY, I.I.

Diamond crystals in the "Udachnaya" kimberlite pipe. Zap. Vses.
min. ob-va 87 no.4:494-496 '58. (MIRA 12:1)
(Daaldyn Valley--Kimberlite) (Daaldyn Valley--Diamond crystals)

AUTHORS: Lichkov, B. L., Shafranovskiy, I. I. SOV/20-120-3-46/67

TITLE: Coincidence of Some Angular Quantities in Geology, Crystallography and Hydrodynamics (Sovpadeniye uglovykh velichin v geologii, kristallografii i gidrodinamike)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 3, pp.603-605 (USSR)

ABSTRACT: The purpose of the present paper is to draw the attention to a remarkable coincidence of the angle of 35° (or, more exactly, of $35^{\circ}15'52''$) and of the angle complementary to it of 55° (or, of $54^{\circ}44'08''$) in the mentioned fields. The majority of mountain ranges on the globe have a course following the 35th parallel (Ref 12). Zones of the most salty ocean water are recorded between the 30th and the 35th parallel. (Refs 4, 5). The transtropical barometric maxima are located on the 35th parallel (Ref 3). Veronnet (Veronne) (Refs 30, 31) computed mathematically that on a rotating heterogeneous geoid mountains must form along 35th parallel, this parallel being called the "critical" one. The secular rise and sag of the earth's crust occurs in four zones between the pole and the equator, their boundaries coinciding

Card 1/3

SOV/20-120-3-46/67

Coincidence of Some Angular Quantities in Geology, Crystallography and Hydrodynamics

with the 35th and the 71th parallel (Ref 7). The sun exhibits parallel zones of sun spots along the $\pm 35^{\text{th}}$ parallel. The width dislocations on the lithosphere surfaces are bound to two critical parallels ($35^{\circ}15'52''$) (Ref 9). The angle of $54^{\circ}44'$ is of exceedingly high importance in crystallography. The polar distance for the octahedron facettes equals $54^{\circ}44'08''$. Octahedron and tetrahedron are the most important forms in crystal syngonism, which, hence, also play an eminent part in crystal chemistry and stereochemistry (Ref 2). The angle of $54^{\circ}44'08''$ is of particular importance also in hydrodynamics (Refs 18, 23). Two spheres of equal size moving in the same direction with identical velocity within a liquid act with a force f upon each other. This force becomes equal to zero when the angle α is equal to $54^{\circ}44'08''$ (α denoting the angle between the direction of motion and the straight line connecting the centers of the front and rear sphere). These conclusions were utilized in the discussion of the dynamics of the family (Refs 18, 19). The angle of $54^{\circ}44'$ was also called "critical". It was also attempted to draw a schematic analogy between two equal

Card 2/3

SOV/20-126-3-46/67
Coincidence of Some Angular Quantities in Geology, Crystallography and Hydrodynamics

spheres moving in the same direction in the liquid and the elementary particles in a solution aiming towards a crystallization center (Ref 14). The author's attention was directed towards this problem by M. V. Stovas. There are 31 references, 21 of which are Soviet.

PRESENTED: January 18, 1958, by D. V. Nalivkin, and N. V. Belov, Members, Academy of Sciences, USSR

SUBMITTED: December 18, 1957

1. Hydrodynamics
 2. Crystal structure--Determination
 3. Earth--Configuration
 4. Mountains--Location
 5. Salts
- Distribution

Card 3/3

SHAFRANOVSKIY, I. I.

NIKOLAY VASILEVICH BELAY; GEORGIY BORISOVICH BEREY; ILLARION
ILLARIONOVICH SHAFRANOVSKIY

"IN MEMORIAM OF E.S. FEDOROV"

A Report presented at Symposium of the International Union of Crystallography
Leningrad, 21-27 May 1959

NO: B, 3135, 471 28 July 1959

SHAFRANOVSKIY, I. I.

"Ways of Further Development of Crystal Chemical Analysis"

a report presented at Symposium of the International Union of
Crystallography Leningrad, 21-27 May 1959

STULOV, N.N.; SHAFRANOVSKIY, I.I.

Crystallography and mineralogy in the Leningrad Mining Institute.
Zap. LGI 40:22-28 '59. (MIRA 14:5)
(Leningrad--Crystallography--Study and teaching)
(Leningrad--Mineralogy--Study and teaching)

AUTHOR: Shafranovskiy, I.I. SOV/70-4-3-4/32
TITLE: Geometrical Varieties of Facial Forms for Crystals of
Lower and Intermediate Syngonies
PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 3, pp 293-301 (USSR)

ABSTRACT: It is no longer adequate to be limited to the 47 simple-face forms which will only describe convex plane-faced crystalline polyhedra. They are not sufficient to characterise exactly the forms of skeletons, pyramids and zones of growth, shells, etch figures, induced surfaces, summary polyhedra with re-entrant angles for twins and parallel growths. Recent studies of corner and edge forms fill the gap to some extent. Positive and negative crystal forms must first be studied. Real crystals must either have faces outside (+K) or inside (-K). Individual simple forms can exist on the convex surfaces of ordinary crystals or on concave surfaces of various sorts. Corners and edges must also be considered. Facial huddles are widely distributed in crystalline materials in the form of the faces between pyramids of growth faces.

Card1/3

SOV/70-4-3-4/32
Geometrical Varieties of Facial Forms for Crystals of Lower and Intermediate Syngonies

Polyhedra with re-entrant angles are discussed. These have only been treated before in the mathematical literature in a way unrelated to crystals.

Pedions, Pinacoids, Dihedra

These have only positive and negative varieties.

Prisms - Possible forms are listed in the various ways in which the faces intersect, i.e. whether they intersect in 1, 2, 3 or more lines. These ways are 0, usual prisms; \square facial bundles; B and B_1 ingoing angles.

In all, there are 24 positive varieties and 24 negative. Examples of these from Goldschmidt's Atlas are given.

Pyramids - There are 17 negative and the same number of positive forms.

Dipyramids - There are 8 (4 + and 4 -) longitudinal sections (0, \square , B, B_1 and -0, $-\square$, -B, $-B_1$) and these are combined with the 17 pyramidal forms giving 136 possibilities.

Card2/3

SOV/70-4-3-4/32

Geometrical Varieties of Facial Forms for Crystals of Lower and Intermediate Syngonies

Figures of higher symmetry, varieties of orthorhombic tetrahedra, tetragonal tetrahedra and rhombohedra (8) and varieties of scalenohedra and trapezohedra (24) are also tabulated. There are 8 figures, 5 tables and 16 references, of which 15 are Soviet and 1 German.

ASSOCIATION: Leningradskiy gornyy institut (Leningrad Mining Institute)

SUBMITTED: February 19, 1958

Card 3/3

SOV/70-4-4-4/34

AUTHOR: Shafranovskiy, I.I.

TITLE: Geometrical Varieties of Face Forms for Crystals of Cubic Syngony

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 4, pp 477-486 (USSR)

ABSTRACT: Data on the geometrical varieties of facial forms, including both positive and negative forms, facial bundles and polyhedra with re-entrant angles for cubic crystals are presented. Numerous examples of the occurrences of such varieties in real crystals are given (mostly in skeletal forms and twin growths). The enumeration of forms has been done earlier for lower symmetries (Ref 1). Only the holohedral classes are considered and the hemihedral and tetartohedral varieties can be derived by taking only the appropriate faces of the holohedral case. The varieties are listed under: cube; octahedron, rhombic dodecahedron; tetrahexahedron; trigon-trisectahedron; hexakis-octahedron. In all, there are 46 varieties from these simple forms and the other lower-symmetry varieties can be deduced from these. The examples show the frequent

Card1/2

SOV/70-4-4-4/34
Geometrical Varieties of Face Forms for Crystals of Cubic Syngony

occurrence of these face forms. In twinned growths, two individuals often make up a simple form but with re-entrant angles, e.g. two interpenetrating tetrahedra of diamond or tetrahedrite give an octahedron; two interpenetrating dodecahedra of pyrite give a tetrahexahedron with re-entrant angles. Lower symmetry systems, in particular, show this phenomenon, e.g. alexandrite. This shows that a knowledge of the simple forms with re-entrant angles simplifies the understanding of twin forms. These varieties of forms can be successfully used for the detailed description of skeleton formations, parallel growths, etc. There are 10 figures and 4 references, of which 3 are Soviet and 1 German.

ASSOCIATION: Leningradskiy gornyy institut im. G.V. Plekhanova
(Leningrad Mining Institute imeni G.V. Plekhanov)

SUBMITTED: March 31, 1959

Card2/2

SHAFRANOVSKIY I. I.

SOV/26-50-5-41/47

3(5)

AUTHOR: Shafraunavskiy, I.I., Professor (Leningrad)

TITLE: Outlines of Geologists

PERIODICAL: Priroda, 1959, Nr 5, p 121 (USSR)

ABSTRACT: The author favorably reviews the book by Professor S.S. Kuznetsov on "Otechestvennyye geologi" (Native Geologists), published by the Ministry of Education of the USSR, 1958, 196 pp.

Card 1/1

SHAFRANOVSKIY, I.I.

Pseudo forms of crystals and their mineralogical significance. (MIRA 12:3)
Zap. Vses. min. ob-va 88 no.1:13-20 '59.
(Crystallography)

SHAFRANOVSKIY, I.I.

Crystallography, mineralogy, and petrography in the "Zapiski" of
the Leningrad Mining Institute. Zap. LGI 40:47-50 '59.

(MIRA 14:5)

(Crystallography--Periodicals)

(Mineralogy--Periodicals)

(Petrology--Periodicals)

SHAFRANOVSKIY, I.I.; MOKIYEVSKIY, V.A.; STULOV, N.N.

Discussion on the nomenclature of crystallographic forms at the
French Mineralogical Society. Zap.Vses.min.ob-va 88 no.4:492-495 '59.
(MIRA 12-11)

1. Deystvitel'nyye chleny Vsesoyuznogo mineralogicheskogo obshchestva.
(Crystallography--Terminology)

SHAFRANOVSKIY, I.I., prof. Prinimali uchastiye: MOKIYEVSKIY, V.A.; STULOV, H.M.; GENDELEV, S.Sh.; PIS'MENNYI, V.A.; BALASHOVA, M.N.; MIKHEYEVA, I.V.; SAL'DAU, E.P.; KALININ, A.I.; DOLIVO-DOBROVOL'SKAYA, G.M. PIOTROVSKIY, G.L., dotsent, otv.red.; FURMAN, K.P., red.; MALYAVKO, A.V., tekhred.

[Lectures on the morphology of mineral crystals] Lektsii po kristal-lomorfologii mineralov. L'vov, Izd-vo L'vovskogo univ., 1960.
161 p. (MIRA 14:1)

1. Kafedra kristallografii Leningradskogo gornogo instituta (for Mokiyeveskiy, Stulov, Gendelev, Pis'mennyi, Balashova, Mikheyeva, Sal'dau, Kalinin, Dolivo-Dobrovol'skaya).
(Minerals) (Crystals)

S/070/60/005/004/014/016/XX
E132/E460

AUTHOR: Shafranovskiy, I.I.

TITLE: An Extended Theory of Crystal Forms and the Morphology of Twins ✓

PERIODICAL: Kristallografiya, 1960, Vol. 5, No. 4, pp. 525-529

TEXT: Forty-seven simple crystallographic forms in fact permit to characterize exactly only the convex crystal polyhedrons. Skeleton crystals, twins, inductive surfaces, zones and pyramids of growth, sculptural complications on the faces require other geometrical models for their exact description. This necessitated the introduction of a series of new conceptions in the modern morphology of crystals. It has proved expedient to put forward the conception of simple peak and edge forms - the aggregates of corners and edges of a crystal interconnected by its symmetry elements. It became also necessary to extend the limits of the theory of simple face forms of crystals by introducing into it the varieties of reentrant angles. At present the definition of all these geometric varieties of crystallographic forms is completed. The varieties of face forms with reentrant angles are particularly important for the exact morphologic description of skeleton forms
Card 1/3 ✓

S/070/60/005/004/014/016/XX
E132/E460

An Extended Theory of Crystal Forms and the Morphology of Twins and twins. H. Curien and Le Corre suggested that bichromatic symmetry using the Shubnikov elements of antisymmetry be applied for the characteristics of twins. H. Curien and J. D. H. Donnay use the conception of chromatic symmetry to define the complete symmetry of twins. However these methods concern only the general symmetry of the twin and give no conception about its form. Here the varieties of simple face forms, frequently displaying themselves on twins, may be successfully applied. Using in the description of twins the conception of summarized simple forms, with reentrant angles or without them, we must consider all these forms as bichromatic figures; so, for instance, a penetration twin of two tetrahedrons of a tetrahedrite gives a summarized simple bichromatic form corresponding to the variety of an octahedron with reentrant angles. The penetration twin of two pentagon - dodecahedrons of pyrite corresponds to a summarized simple bichromatic form - a variety of a tetrahedron with reentrant angles. The addition of a list of bichromatic simple forms to the formulas of general symmetry gives an exhaustive conception of

Card 2/3

S/070/60/005/004/014/016/XX
E132/E460

An Extended Theory of Crystal Forms and the Morphology of Twins

twins. There are 4 figures and 14 references: 11 Soviet,
1 German, 1 French and 1 English.

ASSOCIATION: Leningradskiy gornyy institut im. G.V.Plekhanova
(Leningrad Institute of Mines im. G.V.Plekhanov)

SUBMITTED: February 3, 1960

Card 3/3

BURAKOVA, T.N.; SHAFRANOVSKIY, I.I.

Habits of crystal edges and skeletons in microchemical analysis.
Min.sbor. no.14:125-134 '60. (MIRA 15:2)

1. Gosudarstvennyy universitet imeni A.A. Zhdanova, Leningrad
i Gornyy institut imeni G.V. Plekhanova.
(Crystallography)

SHAFRANOVSKIY, I.I. prof.

Geometry of stone flowers. Priroda 49 no. 12:5-9 D '60.

(MIRA 13:12)

1. Leningradskiy gornyy institut.
(Crystallography)

SHAFRANOVSKIY, I. I.

Possibilities of applying the crystallochemical analysis for
solving minerogenetic problems. Zap. Vses. min. ob-va 89 no.1:
1-14 '60. (MIRA 13:10)

(Mineralogy)

FRANK-KAMENETSKIY, V.A.; SHAFRANOVSKIY, I.I.

Concerning "cubic" quartzes. Zap. Vses. min. ob-va 89
no. 4:448-453 '60. (MIRA 13:11)
(Quartz)

MIKHEYEV, Viktor Ivanovich, prof. [1912-1956]; LEVENBERG, N.V., otv. red.;
TATARINOV, P.M., red.; ALFEROV, B.A., prof., red.; ANDREYEV, B.A.,
prof., red.; GRIGOR'YEV, D.P., prof., red.; POGREBITSKIY, Ye.O., prof.,
red.; TOLSTIKHIN, N.I., prof., red.; SHAFRANOVSKIY, I.I., prof., na-
uchnyy red.; MIKHEYEVA, I.V., dots., nauchnyy red.; DAYEV, G.A., ve-
dushchiy red.; ZABRODINA, A.A., tekhn. red.; GENNAD'YEVA, I.M., tekhn.
red.

[Homology of crystals] Gomologiya kristallov. Leningrad, Gos.
nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 206 p.
(MIRA 14:10)

1. Chlen-korrespondent AN SSSR (for Tatarinov).
(Crystallography)

SHAFRANOVSKIY, Ilarion Ilarionovich; BOKIY, G.B., red.; POPOV, G.M.,
red.; FEDOTOVA, A.I., red.izd-va; GUROVA, O.A., tekhn. red.

[Mineral crystals; curve-faced skeleton, and granular forms]
Kristally mineralov; krivogrannye, skeletnye i zernistyie for-
my. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geol.i okh-
rane nedr, 1961. 331 p. (MIRA 15:1)
(Crystallography)

SHAFRANOVSKIY, I.I.

Mineralogical catalog of Lomonosov. Ochno-ist. geol. znan. no.9:
3-21 '61.

(MIRA 14:10)

(Mineralogy--Catalogs and collections)

(Lomonosov, Mikhail Vasil'evich, 1711-1765)

FRANK-KAMENETSKIY, V.A.; ~~SHAFFRANOVSKIY, I.I.~~

Law of crystallographic limits and the principle of close packing. Kristallografiia 6 no.6:892-900 N-D '61.

(MIRA 14:12)

1. Leningradskiy gosudarstvennyy universitet imeni A.A.Zhdanova.
(Crystallography)

MOKIYEVSKIY, V.A.; SHAFRANOVSKIY, I.I.

Pattern for the description of actual crystal forms.
Kristallografiia 6 no.6:944-948 N-D '61. (MIRA 14:12)

1. Leningradskiy gornyy institut.
(Crystallography)

SHAFRANOVSKIY, I.I.; MOKIYEVSKIY, V.A.

Manifestation of infinite symmetry on mineral crystals. Min.
sbor. no.15:58-64 '61. (MIRA 15:6)

1. Gornyy institut imeni G.V. Plekhanova, Leningrad.
(Crystallography)

in IRIDOMSELY, ... I., prof.: MAKIYEVSKIY, V.A.; AFANAS'YEV, I.I.

Aspects of infinite symmetry in twins. Zap.Vses.min.ob-va
57.00.58371-571 '65.

(MIRA 18:11)

3. Daryavitel'nyye chleny Vsesoyuznogo mineralogicheskogo
obshchestva (for Shafranovskiy, Makiyevskiy).

LICHKOV, B.L.; SHAFRANOVSKIY, I.I. [Shafranovs'kiy, I.I.]

Critical parallels of the earth's ellipsoid and their angular analogues in crystals. Geol. zhur. 21 no.6:12-23 '61. (MIRA 15:2)

1. Leningradskiy gornyy institut.
(Earth—Figure)(Crystallography)

MIKHEYEV, V.I. [deceased]; SHAFRANOV ~~II~~, I.I.; GENDELEV, S.Sh.

Crystal edge forms. Report No.3: Simple edge forms of trigonal
and hexagonal systems. Zap. LGI 38 no.2:122-139 '61.

(MIRA 15:1)

(Crystallography)

SHAFRANOVSKIY, I.I.

Results of developing a universal geometrical theory of crystal
forms. Zap. LGI 38 no.2:182-189 '61. (MIRA 15:1)
(Crystallography)

SHAFRANOVSKIY, I.I.

An open letter to mineralogists. Zap.Vses.min.ob-va 90 no.4:
481-486 '61. (MIRA 14:9)
(Crystallography)

RASKIN, Naum Mikhaylovich; SHAFRANOVSKIY, I.I., doktor geol.-min. nauk, otv. red.; ARON, G.M., red. izd-va; ZAMARAYEVA, R.A., tekhn. red.

[M.V.Lomonosov's chemistry laboratory; chemistry in the St.Petersburg Academy of Sciences in the second half of the 18th century] Khimicheskaja laboratorija M.V.Lomonosova; khimija v Peterburgskoi Akademii nauk vo 2-i polovine XVIII v. Moskva, Izd-vo Akad. nauk SSSR, 1962. 339 p.

(MIRA 15:4)

(Leningrad--Chemical laboratories)

SHAFRANOVSKIY, Illarion Illarionovich; SEMENOVA, Ye.A., red. izd-va;
ZAMARAYEVA, R.A., tekhn. red.

[History of crystallography in Russia] Istoriia kristallografii
v Rossii. Moskva, Izd-vo Akad. nauk SSSR, 1962. 413 p.
(MIRA 15:5)

(Crystallography)

MOROZOV, Aleksandr Antonovich; SHAFRANOVSKIY, I.I., otv. red.;
MEDVEDEV, M.V., red. izd-va; BOCHEVER, V.T., tekhn. red.

[M.V.Lomonosov; his career up to maturity, 1711-1741] M.V.Lo-
monosov. Put' k zrelosti, 1711-1741. Moskva, Izd-vo Akad.nauk
SSSR, 1962. 486 p. (MIRA 15:1)
(Lomonosov, Mikhail Vasil'evich, 1711-1765)

GAYUI, Rene Zhyust [Hany, Rene-Just]; SHAFRANOVSKIY, I.I., prof.;
ZABOTKINA, O.S. [translator]; STRATANOVSKIY, G.A. [translator];
SHUBNIKOV, A.V., akademik, red.; BOKIY, G.B., red.;
PETROVSKIY, I.G., akademik, red.; ANDREYEV, H.H., akademik, red.;
KAZANSKIY, B.A., akademik, red.; YUDIN, P.F., akademik, red.;
DELONE, B.N., red.; SAMARIN, A.M., red.; ZUBOV, V.P., prof., red.;
LEBEDEV, D.M., prof., red.; FIGUROVSKIY, N.A., prof., red.;
KUZNETSOV, I.V., kand. filos. nauk, red.; OZNOBISHIN, D.V., kand.
istor. nauk, red.; SUSHKOVA, T.I., red. izd-va; SMIRNOVA, A.V.,
tekhn. red.

[Structure of crystals; selected works] Struktura kristallov;
izbrannye trudy. Sostavlenie, stat'ia i primechaniia I.I.
Shafranovskogo. Redaktsiia A.V. Shubnikova i G.B. Bokiia. Mo-
skva, Izd-vo Akad. nauk SSSR, 1962. 175 p. Translated from the
French. (MIRA 15:3)

1. Chlen-korrespondent Akademii nauk SSSR (for Bokiya, Delone,
Samarin).

(Crystallography)

BROD, I.O., prof., doktor geol.-miner. nauk; VARSANOF'YEVA, V.A.,
prof., doktor geol.-miner. nauk; VELIKOVSKAYA, Ye.M., prof.,
doktor geol.-miner. nauk; GORDEYEV, D.I., prof., doktor
geol.-miner. nauk; DOBROV, S.A., doktor geol.-miner. nauk
[deceased]; KOF, M.I., kand.tekhn.nauk, [deceased]; KUZMICHEVA,
Ye.I., mladshiy nauchnyy sotr.; KUZNETSOV, Ye.A., prof., doktor
geol.-miner. nauk; LEONOV, G.P., prof., doktor geol.-miner. nauk;
MENNER, V.V., dotsent, doktor geol.-miner. nauk; HAZARENKO, I.I.,
kand. sel'khoz.nauk; POBEDIMSKAYA, Ye.A., assistent; POPOV, S.P.,
prof., doktor geol.-miner. nauk; SMIRNOV, V.I.; SMIRNOV, N.N.,
prof., doktor geol.-miner. nauk; SMOL'YANINOV, N.A., prof.,
doktor geol.-miner. nauk [deceased]; FENIKSOVA, V.V., dotsent,
kand.geol.-miner. nauk; SHAFRANOVSKIY, I.I., prof., doktor geol.-
miner. nauk; Primali uchastiye: BARSANOV, G.P., prof.,
doktor geol.-miner. nauk; BOKIY, G.B.; GORSHKOV, G.P., prof.,
doktor geol.-miner. nauk; KUDRYAVTSEV, V.A., prof., doktor
geogr. nauk; MARKOV, P.N., dotsent, kand.geol.-miner. nauk;
MOROZOV, S.S., prof., doktor geol.-miner. nauk; ORLOV, Yu.A.,
akademik; SERGEYEV, Ye.M., prof., doktor geol.-miner. nauk;
TVALCHRELIDZE, A.A.; GEORGIYEVA, G.I., tekhn. red.
(Continued on next card)

BROD, I.O.--- (continued) Card 2.

[History of geology at Moscow University] Istoriia geologicheskikh nauk v Moskovskom universitete. Pod red. D.I.Gordeva. Moskva, Izd-vo Mosk. univ., 1962. 351 p. (MIRA 15:7)

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(Moscow University) (Geology--Study and teaching)

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